WESTON TRANSMITTAL FORM

TO: U.S. Environmental Protection Agency
RCRA Corrective Action and Permits
Branch, Region VII
901 North 5th Street
Kansas City, KS 66101-2907

Date:	April 4, 2008	Job No. 06548.016.001.0050
Attn.:	Wray R. Rohrman, Project Manager	
Re:	Revisions to the CMI Work Plan for SWMU 19A and Southeast AOC-1 John Deere Waterloo Works EPA RCRA I.D. No. IAD005289806	

WE ARE SENDING YOU:

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1	26 March 2008	3	Cover and Title Pages (Revision 1)
2	26 March 2008	3	Section 1 – Program Management Plan
3	26 March 2008	3	Section 4 – Data Collection Assurance
4	26 March 2008	3	Deere & Co. Certification (Revision 1)

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Signed: ____________________ **Date:** April 4, 2008

REMARKS:

Mr. Rohrman:

Attached, please find the revised pages you requested in your 27 March 2008 letter with the caption; "EPA Review of Corrective Measures Implementation Work Plan for SWMU 19A and Southeast AOC-1". Please note that Comment #2 in your letter corresponds to Section 1, Page 1-23 of the CMI Work Plan.

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Brian A. Hahn, P.G. Brian A. Hahn
Project Manager.

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WESTON TRANSMITTAL FORM

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CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN (Revision 1)

SWMU 19A AND SOUTHEAST AOC 1 JOHN DEERE WATERLOO WORKS WATERLOO, IOWA

Prepared for

JOHN DEERE WATERLOO WORKS
400 Westfield Avenue
Waterloo, Iowa 50704

Prepared by

WESTON SOLUTIONS, INC.
750 East Bunker Court, Suite 500
Vernon Hills, Illinois 60061

May 2007
Revised: 26 March 2008

CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN SWMU 19A AND SOUTHEAST AOC 1 JOHN DEERE WATERLOO WORKS WATERLOO, IOWA

Prepared for

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May 2007
Revised: 26 March 2008

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SECTION 1
PROGRAM MANAGEMENT PLAN

1.1 INTRODUCTION

Weston Solutions, Inc. (WESTON®) has prepared this Corrective Measures Implementation (CMI) Work Plan on behalf of Deere & Company (Deere). This CMI Work Plan submittal presents corrective measures implementation activities that will be conducted at solid waste management unit (SWMU) 19A and the southeast Area of Concern (Southeast AOC 1). Both SWMU 19A and the Southeast AOC 1, formerly a part of Deere's property located at 400 Westfield Avenue in Waterloo, Iowa, are now owned by the Cedar Valley TechWorks, Inc. (TechWorks). Deere's property includes two separate facilities namely the John Deere Waterloo Works (JDWW) and the John Deere Foundry Waterloo (JDFW). Although both JDWW and JDFW are situated within the same physical boundary, they operate independently of each other for internal management purposes. For simplicity and for the purposes of this report, JDWW and JDFW have been grouped together and referred to as "John Deere Waterloo Works" (Waterloo Works). Therefore, any reference to "Waterloo Works" in this report implies both JDWW and JDFW. A site layout of the Waterloo Works including SWMU 19A and the Southeast AOC 1 is shown in Figure 1-1.

This submittal has been prepared pursuant to and in accordance with an Operating Permit (Appendix A) for a Hazardous Waste Management Facility (IAD005289806), issued by the United States Environmental Protection Agency (U.S. EPA) on 27 November 2006 (U.S. EPA, 2006). The permit was issued for implementing corrective action activities at Deere's Waterloo Works Facility. The Operating Permit also contains specific requirements for implementing a final remedy to address contaminated soils present within the footprint of SWMU 19A and southeast AOC 1 locations.

1.2 BACKGROUND

1.2.1 Site Location

As mentioned previously, SWMU 19A and the Southeast AOC 1 were formerly a part of the Waterloo Works facility and are now owned by TechWorks. SWMU 19A and the Southeast AOC 1 (Figure 1-1) are situated in the southeast corner of the former Waterloo Works facility.

The Waterloo Works facility is located along the south side of the Cedar River. Using the Universal Transverse Mercator Coordinate System, Deere is located at north latitude 42° 30' 12" and west longitude 092° 21' 05". Twenty-one separate abstracts make up the legal description of the Deere property. Therefore, the approximate legal description is the SE 1/4 of Section 22 and the SW 1/4 of Section 23 in Township 89 North, Range 13 West. Although the majority of the property is located within the area described above, a small portion of the property is located in the NE 1/4 of Section 27 and the NW 1/4 of Section 26 in Township 89 North, Range 13 West.

The present day Waterloo Works is bounded by River Road to the north and by Westfield Avenue to the south. These streets converge at the east and west ends of the property. Beyond these boundaries lie the Cedar River and local parks/green belts to the north, and a highway system (Highway 218) and light industry to the south. Black Hawk Creek flows northward until it joins with the Cedar River, which flows to the southeast. There are currently no residential housing units within 1/4 mile of the facility.

The majority of the area encompassed by SWMU 19A and Southeast AOC 1 is currently covered by buildings and/or concrete parking lots and roadways. These barriers serve to restrict potential exposure to contaminated subsurface materials. SWMU 19A is the former location of a rubbish pit area that is believed to extend under several buildings in the immediate vicinity. The pit is reported to be approximately 10,000 square feet (SF), but the exact size is unknown. The former rubbish pit area is currently covered by either buildings or concrete pavement. Various waste materials such as wood, cardboard, and paper are believed to have been placed in this pit and burned. Historically, the Southeast AOC 1 has been used for industrial purposes.

1.2.2 Operational History

The JDWW is a metal cutting, grinding, finishing, and assembling facility. The JDWW was originally established as the Waterloo Gasoline and Tractor Engine Company in 1893. In 1913, this company was reorganized as the Waterloo Gasoline Engine Company and began to produce tractors. The company expanded tremendously between 1913 and 1918 due to several successful models of tractors. In 1918, Deere and Company of Moline, Illinois, purchased the facility to expand its line of farm implements. In 1926, the facility was renamed the John Deere Tractor Company.

As production increased during the late 1920s, the facility was expanded to meet demands. Expansion of the Deere facility was completed by using dredge material from the Cedar River, industrial waste debris, and foundry waste sands. In 1928, 12 new buildings were constructed on 11 acres. At this time, the John Deere Tractor Company occupied more than 75 acres of a 2-mile-long area along the south side of the Cedar River. The Black Hawk Creek was rerouted on three separate occasions between 1947 and 1969 to accommodate expansions.

In 1967, an additional 124 acres of land on the west bank of Black Hawk Creek were purchased. The property consisted of lowlands, agricultural fields, and a former residential area. The lowlands were filled with river dredge sand and foundry waste sand to the present elevations. Continued expansion in 1975 resulted in the creation of the John Deere Engine Works on a different site. In 1980, with the opening of a new plant (John Deere Tractor Works) in the northeast portion of Waterloo, the original Westfield Avenue facility was renamed the John Deere Component Works (JDCW). In 1986, the foundry operations located on the west side of Black Hawk Creek separated from the JDCW to become the JDFW. The JDCW and the John Deere Tractor Works were merged in 1987 and renamed the JDWW Westfield Avenue Plant and Donald Street Plant, respectively. This report only addresses the JDWW Westfield Avenue Plant. These facilities are privately owned and operated by Deere & Company of Moline, Illinois.

In 1993 an RFI was completed by Deere and approved by the U.S. EPA Region VII as part of the Resource Conservation and Recovery Act (RCRA) Part B permit requirements. A CMS was completed by Deere in 1994 and revised in 1998 (WESTON, 1998). Both the RFI and CMS addressed potential concerns related to on-site SWMUs. Only one SWMU (No. 19A - Rubbish

Pit) is located in the southeast portion of the facility, which Deere has transferred ownership to TechWorks. Historical records report that the rubbish pit was approximately 10,000 SF and is now covered by buildings and/or concrete. Various waste materials such as wood, cardboard and paper are believed to have been placed in this pit and burned. The current footprint of SWMU 19A is approximately 43,560-square-feet (SF) or about one acre.

1.3 REGULATORY HISTORY AND FACILITY INVESTIGATION

The U.S. EPA conducted a Resource Conservation and Recovery Act (RCRA) facility Assessment in 1991 to identify releases or potential releases from any SWMU at the facility. Based on this assessment, the U.S. EPA issued a permit for Deere to operate a Hazardous Waste Storage Facility (IAD005289806) at JDWW, which became effective on 12 August 1991. Having the permit allowed JDWW to accept waste from other Deere facilities located off site, as well as from sources not affiliated with Deere. The October 1994 permitted hazardous waste storage facility consists of one enclosed container storage area with a maximum capacity of 14,905 gallons. Treatment of much of the waste stored in the container storage area is completed off site. Off-site treatment includes fuel blending, incineration, recycling, and stabilization/solidification.

Subsequent to the Part A and Part B permit issuance, and under Section 3004 (u) of the RCRA 42 U.S.C., Section 6924, as amended by Section 206 of the Hazardous and Solid Waste Amendments of 1984 (HSWA) and CFR 264.101, the U.S. EPA Region VII directed Deere to conduct an RFI/CMS at the Waterloo Works.

Additional areas were identified as newly discovered SWMUs, newly discovered AOCs, or newly discovered releases requiring further investigation. U.S. EPA identified 27 solid waste management units (SWMUs) and areas of potential concern. Seventeen of these units required additional environmental investigations. Investigation of these units occurred in 1992 and 1993.

In order to further evaluate the groundwater conditions at the site, the U.S. EPA requested Deere complete a groundwater flow model for the facility. Therefore, in 1998, Deere developed a numeric groundwater model using the United States Geological Services (USGS) MODFLOW program. Deere also collected 22 rounds of groundwater level measurements from on-site production and monitoring wells. Potentiometric surface contour maps were prepared from these water level measurements to substantiate the results of the modeling effort. The significant results of the groundwater flow model are provided as follows:

- A complex groundwater flow system is present beneath the site. This system consists of two distinct hydrostratigraphic units that are separated by a semi-confining layer.
- Two large flow systems exist at the site, an eastern system that converges radially toward the production wells located at JDWW, and a western system which converges radially toward the JDFW production wells.
- Throughout the entire site, contour lines indicate that all flow paths converge towards one or more of the on-site production wells.

In June 2001, additional site investigation activities were performed at the JDWW as part of the RFI/CMS process. Detailed discussion of work performed during the 2001 investigation can be found in the Supplemental RFI Report (WESTON, 2001). Deere requested U.S. EPA approval for conducting the following activities:

- Fill the Northern and Southern Foundry Settling Ponds with non-hazardous waste material.
- Further characterize the waste casting sand and paint waste disposal areas immediately to the southwest corner of Building T-10.
- Further characterize the area to the immediate northeast of H Building for future expansions.
- Further characterize the area between H and Z Buildings for future expansions.

Based upon the results of this additional investigation, U.S. EPA granted Deere approval to fill the Southern Foundry Settling Pond and to complete expansion at the T-10 Building. After reviewing the Supplemental RFI Report, U.S. EPA also requested a more thorough investigation at the Northern Foundry Settling Pond prior to filling. In addition, U.S. EPA requested additional characterization and extent of contamination assessment for the North Parking Lot area. Deere, in keeping with its proactive stance in addressing RFI/CMS issues, elected to conduct further investigation of the Northern Foundry Settling Pond and the North Parking Lot areas.

In 2004, Deere completed additional groundwater sampling and assessment activities to collect sufficient data to characterize site-wide groundwater quality, demonstrate that off-site migration is not occurring, and show that current site groundwater conditions are similar to those that have been observed historically. Findings of the 2004 assessment and sampling activities indicated that groundwater analytical results and groundwater flow was generally consistent with historical groundwater results.

As part of a April 2005 investigation for the City of Waterloo, Terracon Inc. of Cedar Falls, Iowa advanced twenty borings (B-1 through B-20) for geotechnical and environmental sampling purposes. Borings were installed within the proposed roadway which primarily lies within the footprint of Southeast AOC 1.

A June 2005 ESA was conducted by Deere within the southeast portion of the Waterloo Works facility where SWMU 19A and Southeast AOC 1 are located. The sampling approach was designed to satisfy U.S. EPA concerns. Thirty-three soil borings were advanced across the southeast portion of the facility using an approximate 200 x 200 ft grid pattern. U.S. EPA approved this grid pattern prior to sampling.

During the investigation, several of the grid locations required modification due to operational and/or underground utility restrictions. The subsurface conditions in the investigation area generally consisted of 2 to 18 ft of fill material (foundry sand, waste castings, etc.), mostly underlain by either bedrock to the south or native sand to the north. A thin (0.5 to 3.5 ft) clay layer was identified along the southeastern property boundary. Borings were continuously sampled to either the depth of groundwater or bedrock, whichever was encountered first. Soil samples were selected from two discrete intervals (typically 0 to 5 ft bgs and a deeper interval) and analyzed for PNAs, PCBs, lead, and chromium. In order to assess the potential for soil vapor intrusion, groundwater samples were collected from two boring locations and monitoring wells MW-16 and MW-17 and chemically analyzed for VOCs.

In March 2006, Deere determined that ownership of additional portions of the property would be transferred to TechWorks.. Therefore, additional sampling was performed to supplement the Phase II ESA. Samples from 14 soil borings were analyzed for PAHs, chromium, lead, and PCBs. Select boring locations were also analyzed for VOCs. In addition, groundwater was collected for VOC analysis from one boring location.

There are two onsite production wells in the immediate vicinity of SWMU 19A. Water from these wells was tested in February and March of 2006 for full Appendix IX parameters.

Laboratory analysis found no exceedances of the U.S. EPA Region IX PRG tap water standards or U.S. EPA maximum contaminant level (MCLs). These wells are intended for non-contact cooling water use and will remain so after the property transfer. Production wells PW-3 and PW-4 will be disconnected from the Deere production well system. Drinking water is provided by the city of Waterloo from off-site city wells. According to the Environmental Data Resources' (EDR) database search, there are no public water supply wells within one/half-mile of the subject property.

Based on the results of previous investigation activities, several organic and inorganic constituents were detected in waste fill and native materials within the boundaries of SWMU 19A and the Southeast AOC 1. Several of these constituents may pose a potential exposure risk to human health and the environment. Therefore, a Corrective Measures Study (CMS) was developed to identify and evaluate corrective action alternatives and to recommend appropriate corrective measures for addressing soil and groundwater contaminants within SWMU 19A and Southeast AOC 1 (WESTON, 2006). This CMS was prepared in accordance with the expectations articulated in the Advance Notice of Proposed Rulemaking (ANPR) for Resource Conservation and Recovery Act (RCRA) Corrective Action Facilities (61 FR 19432) dated 1 May 1996 and the United States Environmental Protection Agency's (U.S. EPA's) Fact Sheet No. 3 entitled "Final Remedy Selection for Results-based RCRA Corrective Action", March 2000. The CMS was prepared using information obtained from various site investigations conducted through March of 2006.

The foregoing investigation site characterization results and potential corrective measures at the site are described in detail in the RFI Report (WESTON, 1994) and the Corrective Measures Study (CMS) Report (WESTON 1994 and 1998) and the Phase II ESA Report (WESTON, 2005). A summary of investigation results is presented in Section 1.6 of this document.

1.4 ENVIRONMENTAL SETTING

1.4.1 Physiography and Hydrology

Black Hawk County is located on a glacial drift plain that slopes gently toward the southeast and is drained by two major streams. Topography of the region is nearly level to gently sloping, with well to poorly drained, till to loamy soils (Soil Survey of Black Hawk County). The greatest relief is in areas adjacent to the Cedar River.

The Cedar River and its tributaries drain approximately 80 percent of the County. This river is a wide, meandering stream with a broad floodplain bordered by wide, distinct alluvial beaches which are slightly higher in elevation than the immediate floodplain. The Cedar River has meandered considerably in the past. In some places, it has cut new channels, leaving islands of glacial till more than ½ mile wide and one mile long (USDA, Dec. 1978).

The Cedar River generally flows to the southeast and does so near the Waterloo Works. Black Hawk Creek flows to the north, between the JDWW (east) and JDFW (west) and confluences with the Cedar River. The mean discharge rate at a gauging station located one mile downstream of the Waterloo Works is 3,032 cubic feet/second (Statistical Streamflow Summaries, united States Geological Survey, 1990). Typically, the maximum discharge occurs from March to June and varies from 6,000 to 8,500 cubic feet/second. The minimum discharge occurs from November to January at 1,000 to 2,000 cubic feet/second. Maximum recorded discharge prior to 1988 occurred on 29 march 1961 at 76,700 cubic feet/second, and the minimum discharge occurred on 25 January 1959 at 152 cubic feet/second. This does not account for the summer 1993 rates, which may have surpassed the previously recorded maximum discharge rate due to extensive flooding in the area.

Due to engineering controls, the Waterloo Works is not located within the 100-year floodplain. The U.S. Army Corps of Engineers (USACE) constructed a levee that protects the facility and other areas of waterloo from rising flood waters. The flood levee has been designed to protect against a 500-year flood. The levee system also serves the lower reaches of black Hawk Creek. During the 1993 spring and summer flooding of the Mississippi River drainage basin, the levee maintained its integrity and did not breach. The levee is maintained routinely by the City of Waterloo, however, the USACE is responsible for all major repairs.

1.4.2 Water Supply and Usage

The City of Waterloo derives its water supply from 15 municipal groundwater wells. These wells produce from two aquifers, the tops of which are approximately 85 feet and 125 feet deep. The majority of these wells are within a 2-mile radius of Waterloo Works in both an upgradient and downgradient direction. All residential homes in the vicinity of Waterloo Works are believed to be on the public water supply. Waterloo Works utilizes water from eight production wells for use in noncontact facility production activities.

1.4.3 Climate

The prevailing wind direction during the winter is northwesterly. During the summer, moist air from the Gulf of Mexico is supplied by southerly prevailing winds. Northeastern Iowa has a continental humid climate. Temperature and precipitation vary widely during the region's four distinct seasons. The distribution of precipitation throughout the year is very favorable for agriculture, with an average of 72 percent of the total annual precipitation occurring in the April to September crop season. The annual temperature range is wide. January, the coldest month, averages about 14°F; July, the warmest month, averages about 73°F. Extreme temperatures range from about -35° to +112°F. Precipitation during the winter is primarily in the form of snow, with rain dominating at the beginning and the end of the season. Annual snowfall varies considerably from year to year. Temperatures of 0F or below occur on an average of about 29 days per year. Bitterly cold days with high temperatures of 0°F or lower occur on an average of about three days per year. Precipitation increases during the spring and reaches a maximum in July. In summer, precipitation is mainly from thunderstorms, three-fourths of which occur during the summer growing season. Daily temperatures reach their highest level in July or early August (NOAA, 1990).

1.4.4 Local Geology

The local geologic and hydrogeologic conditions at RES have been characterized through the compilation of data from previous site investigations and an interpretation of information contained in published reports. Most of the Waterloo Works is underlain by 2 to 15 feet of foundry sand and/or river dredge sand obtained from dredging activities for rerouting the Black Hawk Creek and Cedar River channels by the USACE. The foundry sand is strong brown to black, very fine to fine grained, rounded to well rounded, with small amounts of slightly cemented core sands. The river dredge sands are typically moderate yellow-brown, mostly fine with some coarse grains, subangular to subround, with trace amounts of small gravel (Unified

Soil Classification System [USCS] SP to SW). Underlying the foundry and/or dredge sands is a native alluvial sand unit.

Throughout the northern two-thirds of the site, there are discontinuous fine-grained lenses overlying the alluvial sand layers. These fine-grained lenses are comprised of black to dark gray organic silt to silty sand (USCS OL to SM) with scattered inclusions of silty sand or sandy clay (USCS SM to SC). At some locations, these lenses are comprised almost entirely of fat clay (OH). Thickness varies from 0 to 4 feet.

The alluvial sand is typically very fine to medium grained, poorly to well-sorted, with little to no cementation, and moderate yellow-brown to gray-brown with trace amounts of clay, silt and small gravel (USCS SM, SP, SW to GP). Mechanical testing data (moisture content and estimated porosity) were obtained during the RFI. Typically moisture content ranged from 8 to 23 percent and estimated porosity ranged from 30 to 35 percent.

Thickness of the overburden ranged from approximately 8 feet at the southern portion of JDWW to greater than 80 feet at the northeast corner of JDWW. Thickness of the overburden in the Southeast AOC 1 ranged from approximately 8 to more than 29 feet. This includes any fill material that may have been placed across the subject facility.

Bedrock underlying the facility represents the Devonian Cedar Valley limestone. According to WESTON boring logs, the depth to bedrock varies from 8 to 83.5 feet below ground surface (bgs). The top two to four feet of bedrock was highly fractured and weathered. Both vertical and horizontal fracturing was observed in several utility trench excavations, situated immediately south of the JDWW buildings. A buried river channel extends from the south central portion of the Water Works and along Black Hawk Creek. This channel extends in a northeasterly direction, with steep banks to the south and east and low gentle slopes to the north and west.

Directly above the bedrock unit, in areas south and west of the buried valley, was a discontinuous silt and clay interval of low to medium plasticity that varies in thickness from zero to approximately 4 feet. Typically, this interval was light yellow-brown with some weathered limestone fragments. Weston interprets this interval to be a weathered limestone residual.

1.4.5 Local Hydrogeology

Groundwater Occurrence

Groundwater beneath the Waterloo Works is under unconfined to localized semi-confined conditions. Typically, saturated soil was found directly beneath the discontinuous silty clay layer in the alluvial sand. In borings where the silty clay lenses were identified, water levels in the borings rose up to approximately 4 feet after penetrating a semi-confining unit. Another confining unit also exists near the contact between the quaternary aquifer and the underlying bedrock aquifer. This confining unit is also evidenced by water levels exhibited by Deere's bedrock production wells. Production wells exhibit water levels in the realm of 60 feet bgs. Whereas, monitoring wells within 200 feet of a bedrock production well exhibit water levels in the realm of 20 feet bgs. These significant changes in head over a short distance are the result of production wells being screened in a lower hydrostratigraphic unit than monitoring wells. The large vertical gradient signifies that a confining layer isolates the quaternary aquifer from the deeper bedrock aquifer.

Multiple aquifers are located in the Silurian/Devonian carbonate bedrock. The bedrock aquifer can be very prolific, as evidenced by several of Deere's production wells that produce 600 to 2,000 gpm. Drilling logs from the installation of Deere's production wells, indicate thick shale sequences at approximately 80 to 100 feet bgs. These shale units restrict the downward migration of groundwater between the shallow bedrock aquifer and deeper bedrock aquifers.

Groundwater Flow and Gradients

Figures 1-2 and 1-3 represent the shallow potentiometric surface in May and June of 2004, respectively. Eleven high-capacity production wells are in operation at the Waterloo Works. These production wells have a significant influence on the localized direction of groundwater movement across the facility. Throughout the entire site, flow paths converge toward one or more of the on-site production wells. Groundwater flow, in the general vicinity of SWMU 19A, and the Southeast AOC 1 is toward the center of JDWW. Groundwater modeling results imply that inward flow gradients would be maintained at the Deere facility during periods of minimal well production. Accordingly, the potential for off-site migration of miscible contaminants is negligible if current operating practices are maintained at the Deere facility.

Horizontal hydraulic gradients were determined by measuring the difference in hydraulic head divided by the horizontal distance along a groundwater flow path at numerous locations across the Water Works. The average hydraulic gradient across JDFW was calculated to be 0.0026 ft/ft. in a converging radial pattern toward FPW-1 and FPW-2. The average hydraulic gradient across JDWW was calculated to be 0.0050 ft/ft in a converging radial pattern toward production wells at said facility.

Hydraulic Conductivity

Slug test results indicate that horizontal hydraulic conductivity (K) ranged from a low of 11.3 feet per day (ft/day) to a high of 201 ft/day in the upper portion of the alluvial aquifer and between 15.6 and 29.2 ft/day near the base of said aquifer. Pumping test results indicate that K values range from approximately 154 to 647 ft/day in the upper portion of the alluvial aquifer, and between 676 and 704 ft/day near the base of the said aquifer.

Groundwater Seepage Velocity

The estimated groundwater flow velocity (assuming Darcian flow conditions), related to the shallow alluvial aquifer, was estimated using the following equation:

$$V_x = KI / N_e$$

Where: V_x = horizontal seepage velocity (feet/year)

K = horizontal hydraulic conductivity (feet/year)

I = horizontal hydraulic gradient (feet/feet)

N_e = Average effective porosity (fraction)

K values and horizontal hydraulic gradients are described in Subsections 1.62 and 1.63. Average effective porosity was estimated from soil samples collected during the installation of Phase I and Phase II soil borings and monitoring wells. Laboratory estimates yielded an average value of 30 percent.

Using the parameter estimates described in this section, the groundwater seepage velocity ranges from 0.20 to 10.8 ft/day in the upper portion of the alluvial aquifer and 0.30 to 11.7 feet/day near the base of said aquifer.

1.4.6 Summary of Pertinent Site Characteristics

This subsection presents a summary of pertinent site characteristics which have been observed during environmental investigations conducted to date. Additional details can be found in the RFI Report (WESTON 1993), the CMS Report (WESTON, 1998) and the ESA Report (WESTON, 2005).

- Based on field data and information gathered from previous investigations, fill material underlying SWMU 19A consists primarily of ubiquitous foundry waste sands. Fill material, occurring within and adjacent to SWMU 19A, ranges in thickness from approximately 8 to 16 ft bgs. Currently, most of the SWMU is covered by impervious surfaces (i.e., buildings, concrete and asphalt), which restricts potential exposure to low level constituents.

- The Southeast AOC 1 is underlain by 2 to 15 ft of foundry sand and/or river dredge sand. Underlying the foundry sand and/or dredge sand is native alluvial soil and weathered bedrock residuals.

- A complex groundwater flow system is present beneath the area encompassing SWMU 19A and Southeast AOC 1. This system consists of two distinct hydrostratigraphic units that are separated by a semi-confining layer.

- Eight high-capacity production wells are in operation at the JDWW. As previously discussed, these production wells have a significant influence on the localized direction of groundwater movement across the facility. Shallow groundwater flow paths, throughout the area encompassing SWMU 19A and Southeast AOC 1, appear to converge toward one or more of the production wells at JDWW. Groundwater modeling results imply that inward flow gradients would be maintained in the area encompassing SWMU 19A and Southeast AOC 1 during periods of minimal well production. Accordingly, the potential for off-site migration of miscible contaminants is negligible if current operating practices are maintained at the JDWW.

- Hydraulic conductivity, based on slug tests, ranges from approximately 11.3 to 201 ft/day in the upper portion of the alluvial aquifer, and between 15.6 and 29.2 ft/day near the base of said aquifer.

- Hydraulic conductivity, as calculated from pumping test results, ranges from approximately 154 to 647 ft/day in the upper portion of the alluvial aquifer, and between 676 and 704 ft/day near the base of the said aquifer.
- Based on the hydraulic conductivity, horizontal hydraulic gradients, and effective porosity, the estimated groundwater flow velocity in the alluvial aquifer at JDWW ranges from approximately 0.2 to 11.7 ft/day.
- The City of Waterloo derives its water supply from 15 municipal groundwater wells. These wells produce water from two water-bearing units, the tops of which are approximately 85 ft and 125 ft deep. The majority of these wells are within a 2-mile radius of JDWW in both upgradient and downgradient directions. All residential homes in the vicinity of JDWW are believed to be connected to Waterloo's public water supply. JDWW utilizes water from eight production wells for use in non-contact facility production activities.

1.5 CORRECTIVE ACTION LEVELS OR CLEANUP STANDARDS

Under the RCRA corrective action process, action levels are established for each environmental medium of concern. Action levels are health- and environmental-based levels that are indicators for the protection of human health and the environment. Where appropriate, action levels are promulgated standards (e.g. MCLs). In other cases, action levels are established on the basis of general exposure assumptions and toxicity criteria.

1.5.1 Soil Cleanup Standards

Historically, the Southeast AOC 1 has been used for industrial purposes. The proposed future land use is light industry and a manufacturing training facility; therefore, the future land use is considered to be industrial. There are no plans for childcare or future residential uses. Given the future industrial use, the action levels for soil are the U.S. EPA Region IX PRGs for industrial land use.

1.5.2 Groundwater Cleanup Standards

The action levels for groundwater are primary MCLs for those constituents for which MCLs have been established. For those constituents for which primary MCLs have not been established, the action levels shall be within the EPA accepted risk range for carcinogenic compounds, 10^{-6} to 10^{-4} with preference toward the lower end of the risk range (10^{-6}) for the total risk for all carcinogenic compounds, and a hazard index (HI) of less than unity for the sum of the hazard quotients for each non-carcinogenic compound.

1.5.3 Standards for Management of Waste

This standard requires that waste management procedures be developed to assure that corrective measures are implemented in a protective manner. In general, wastes will be managed in a manner that is protective of human health and the environment and complies with applicable federal, State, and local requirements.

1.6 DISTRIBUTION OF CONTAMINANTS IN AFFECTED MEDIA

This section presents a summary of pertinent waste characteristics which have been observed during environmental investigations conducted to date. Additional details can be found in the RFI Report (WESTON 1993), the 2005 Roadway Investigation (Terracon, 2005), and the Phase II ESA Report (WESTON, 2005 and 2006).

1.6.1 Surface and Subsurface Soil

Figure 1-4 depicts the soil constituents that exceed Region IX industrial PRGs at SWMU 19A and Southeast AOC 1. The constituents are primarily associated with ubiquitous foundry sand that was used as fill and exhibit minimal variability in type and concentration. Constituents that exceed Region IX PRGs in soil within the footprint of SWMU 19A include the following:

- Arsenic levels exceeded Region IX industrial PRGs in soil sample SB-48 (5-10 ft). The observed arsenic levels, however, are near the typical Iowa background arsenic levels which range from 5 to 10 mg/kg.
- Four to five poly-nuclear aromatic hydrocarbons (PAHs) exceeded Region IX PRGs at the SB-48, SB-129, SB-133 and SB-136 sampling locations. Specifically, exceedances were documented for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Constituents that exceed Region IX PRGs in soil within the footprint of Southeast AOC 1 include the following:

- Volatile organic compounds (VOCs) including 1,1,2,2-tetrachloroethane (1,1,2,2-TCA) and trichloroethylene (TCE) exceeded their respective PRGs in soil samples collected from soil boring locations SB-144 and SB-145, respectively.

- PAHs including naphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

- Polychlorinated biphenyls (PCBs) including aroclor-1254. It should be noted that aroclor -1254 was only reported in boring SB-127 which is located in the southern parking lot.

- Metals including arsenic and lead. Both arsenic and lead were reported at only two soil boring locations. It should be noted that the observed arsenic levels of 3 to 7.40 mg/kg are near the typical Iowa background arsenic levels which range from 5 to 10 mg/kg.

1.6.2 Groundwater

Figures 1-5 and 1-6 depict groundwater constituents that exceed MCLs and Region IX industrial PRGs throughout the Deere facility. The data presented in the aforementioned figures are representative of all data collected to date.

Based on comprehensive groundwater data, collected from the general vicinity of SWMU 19A and Southeast AOC 1, none of the reported constituents exceeded the MCLs and/or the U.S. EPA Region IX tap water standards. Elsewhere within the facility, however, a number of constituents exceeded the MCLs and/or the U.S. EPA Region IX tap water standards during the more recent 2004, 2005 and 2006 groundwater sampling activities. Based on comprehensive groundwater data, generated throughout the Deere facility, the following constituents exceed comparison criteria:

- Vinyl chloride exceeded its MCL of 2 µg/L in monitoring well MW-03B, where it was detected at a concentration of 2.1µg/L.

- Chloroethane was the only VOC which exceeded its Region IX PRG of 4.6 µg/L, in monitoring wells GW-12, GW-22, and MW-03B where it was detected at a concentration of 460 µg/L, 25 µg/L, and 5 µg/L, respectively.

- Bis(2-ethylhexyl)phthalate exceeded its Region IX PRG in monitoring wells GW-05, GW-10, GW-20, GW-21 and GW-22 where it was detected at a concentration of 13 µg/L, 7.3 µg/L, 19 µg/L, 37 µg/L and 230 µg/L, respectively. It should be noted that bis(2-ethylhexyl)phthalate concentrations in monitoring wells GW-10, GW-20, and GW-22 are estimated concentrations.

- 1,4-Dioxane exceeded its Region IX PRG in monitoring wells GW-12, GW-22, MW-02B, MW-03B, MW-04B, and MW-06B at concentrations ranging from 6.2 μg/L to 270 μg/L. The highest concentration was detected in monitoring well GW-22.

- Arochlor-1254 was the only PCB which was detected above its MCL of 0.5 μg/L. Arochlor-1254 exceeded its MCL in monitoring wells GW-08 and GW-09 where it was detected at a concentration of 3.1μg/L and 19 μg/L, respectively.

1.7 IDENTIFICATION OF CONSTITUENTS OF CONCERN (COCs)

Based on discussions presented in Section 1.6, the COCs in soil within the footprint of SWMU 19A and Southeast AOC 1 are 1,1,2,2-TCA, TCE, naphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, arochlor-1254, arsenic and lead.

Based on comprehensive groundwater data collected to date from the general vicinity of SWMU 19A, none of the reported constituents exceeded the MCLs. Elsewhere within the facility, however, vinyl chloride and aroclor-1254 exceeded the MCLs during the more recent 2004, 2005, and 2006 groundwater sampling activities. Thus, both vinyl chloride and aroclor-1254 have been considered COCs in groundwater.

1.8 EXPOSURE PATHWAYS AND RECEPTORS

An exposure pathways analysis depicts the chemical sources, chemical migration pathways in affected media, potential exposure routes, and known or potential human populations. A key function of the analysis is to identify complete exposure pathways and to assist in the development of exposure scenarios and dose estimation models. A complete exposure pathway is one that has all of the elements just described. The exposure pathways analysis presented in the following text is based on the document entitled "Revised Technical Memorandum, Human Health Risk Evaluation for the Cedar Valley TechWorks Facility", WESTON 2006.

On-site surface and subsurface soils have been impacted through historic manufacturing operations and past practices of controlling releases on site. PAHs are the primary COCs at this site. Since the future use will provide office and manufacturing space for businesses, the primary receptors will be a commercial/industrial office worker who spends the workday indoors and a maintenance worker who spends the majority of the workday outdoors. Other workers, employed in short-term construction or belowground installation activities, may also be exposed to residual contamination. While the general public may be present on the site, their potential for exposure is much less than that of an individual who works on the campus. Thus, exposure to the general public is not evaluated in this risk assessment. It should be noted that the vast majority of the site will be covered by either buildings and/or paved surfaces; therefore exposure to soil by any onsite personnel will be minimized.

On-site exposure of future commercial/industrial workers and future construction workers could occur through incidental ingestion of and dermal contact with surface, subsurface or combined soils. Inhalation of particulates could also occur as a result of indoor and outdoor exposure. Dust could be inhaled from wind erosion of onsite surface soils (commercial/industrial worker) or combined surface and subsurface soils (construction worker).

Two production wells (PW-3 and PW-4) are present on the property. While both wells will remain in use, they will not be used as a potable water supply. Potable water is supplied by the City of Waterloo. The production wells provide cooling water for the facilities; infrequent contact with this water currently occurs when testing the cooling water temperature. Appropriate deed restrictions will be placed on the property to prohibit groundwater use as a potable water supply. At request of U.S. EPA, future use of groundwater as a potable water supply by the facility is quantified in this risk evaluation.

In summary, the following receptor groups and exposure routes were considered in the risk evaluation:

Commercial/Industrial Worker (indoors)

- Current/future dermal contact with groundwater
- Future ingestion of groundwater
- Incidental ingestion of surface soil
- Inhalation of particulates released from surface soil

Commercial/Industrial Worker (outdoors)

- Incidental ingestion of surface soil
- Dermal contact with surface soil
- Inhalation of particulates released from surface soil

Construction Worker

- Incidental ingestion of surface/subsurface soil
- Dermal contact with surface/subsurface soil
- Inhalation of particulates released from surface/subsurface soil

1.9 CORRECTIVE ACTION OBJECTIVES

The corrective action objectives for the Southeast AOC 1 were developed in response to information gathered during previous investigation activities. Based on future land use considerations, identified COCs, complete exposure pathways and receptors, and acceptable chemical concentrations for each exposure pathway, the following corrective action objectives for industrial land use were developed:

- Prevent direct contact with surface/subsurface soil having COCs in excess of U.S. EPA Region IX PRGs for industrial land use;
- Prevent ingestion of surface/subsurface soil having COCs in excess of U.S. EPA Region IX PRGs for industrial land use;
- Prevent inhalation of particulates released from surface/subsurface soil having COCs in excess of U.S. EPA Region IX PRGs for industrial land use;
- Prevent current and future ingestion of groundwater having COCs in excess of MCLs.

1.10 FINAL REMEDY

The final remedy, designed to address contaminated soils within the footprint of SWMU 19A and Southeast AOC 1, will be consistent with that established by the U.S. EPA. Key components of the final remedy include institutional controls (IC) and engineered controls.

Figure 1-7 illustrates the conceptual layout of the final remedy. A detailed discussion of the final remedy is discussed in the following text.

1.10.1 Institutional Controls

Institutional controls are non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential exposure to a medium of concern and/or protect the integrity of a remedy. The primary means for establishing institutional controls will be through a restrictive environmental covenant, enforceable by the U.S. EPA. The restriction will be made under the Iowa Uniform Environmental Covenants Act (UECA).

Deed restrictions will be placed on Southeast AOC 1 parcels to prohibit the development of land for unauthorized uses and ensure that unacceptable threats to human health and the environment are prevented. Specifically, deed restrictions would be used to retain the current zoning and restrict future land use to industrial, commercial and public transportation sectors. The current land use is commercial/industrial and the corrective action objectives presented in Section 1.9 are based on continued commercial and/or industrial use of the property. The deed restrictions will not be modified or terminated without specific approval by the U.S. EPA.

In order to comply with the Operating Permit, IC instruments will be established, recorded, and maintained. At a minimum, the IC(s) will include the following elements:

a. Surveyed areas showing the location of areas underlain by contaminated soils;

b. Inspection and maintenance requirements for periodic inspection, reporting and maintenance of the buildings, paved areas, and limited greenspace areas in order to ensure the effectiveness of the engineered barriers;

c. An easement to allow long-term inspection and maintenance of the engineered barrier by all relevant parties;

d. An easement to allow environmental sampling by all relevant parties;

e. Use restriction of water produced from the two existing production wells, currently owned by Techworks, to non-contact cooling water;

f. Advance notification and U.S. EPA approval of all repair and maintenance activities related to existing production wells;

g. Restrictions to prevent installation of all future water production wells;

h. An easement to allow inspection and sampling of all groundwater wells including all production and monitoring wells;

i. Restrictions on the future use of SWMU 19A and Southeast AOC 1. Specifically, the property will not be used for any purpose other than industrial, commercial, or adult educational uses;

j. A procedure for obtaining prior approval from the EPA for any activity involving subsurface excavation, maintenance, or new construction with the footprint of SWMU 19A and Southeast AOC 1.

1.10.2 Engineered Barriers

Engineered controls consist of the use of existing buildings and paved areas as barriers to prevent exposure through direct contact of the contaminated subsurface soils. Currently, the area encompassing SWMU 19A and Southeast AOC 1 is primarily occupied by buildings and concrete/asphalt pavements. Limited vegetated areas exist in the south parking lot. The vegetated areas are comprised of strips that vary in length from approximately 120 feet - near the entrance to the south parking lot and Jefferson Street - to 950 feet near Building C and Westfied Avenue.

As part of the recent title transfer, all buildings and pavements within the footprint of the proposed roadway and associated right-of-way (ROW) corridor, will be demolished and replaced with new engineered barriers in the form of a 9-inch thick concrete roadway, a 5-inch thick asphalt or concrete parking lot, and a minimum of 1.5 feet of clean fill cap in the ROW corridor. The remaining engineered barriers, in the form of concrete floors and pavements, will remain intact. All vegetated areas, with the exception of the vegetated strip along Westfield Avenue, would be capped with clean fill at a minimum thickness of 1.5 feet and reseeded. The vegetated strip along Westfield Avenue is already covered with 3 to 4 feet of clean fill material. The entire soil cover system will be maintained at all times.

The concrete roadway (underlain by 1.5 to 2 feet of sub-base material), the asphalt or concrete parking lot, the clean fill cap and vegetated areas in the ROW corridor, and the existing buildings and pavements will serve as engineered barriers, which will prevent direct contact, ingestion, and inhalation of contaminated soil. Approximately 202,000 square feet (SF) of new engineered barrier in the form of a concrete roadway and approximately 159,000 SF of clean fill cap in the ROW corridor will be constructed. Moreover, an estimated 63,000 SF of existing pavement and soil barriers will require some form of repair and replacement as a result of building demolition activities.

The attainment of corrective action objectives developed for the site is dependant upon site conditions and the maintenance of existing engineered barriers. Long-term maintenance would be required for all engineered barriers. Maintenance would be required to repair potential cracks and weathering of asphalt and/or concrete. The integrity of the barriers would be inspected annually, by a professional engineer or a delegate thereof.

1.10.2.1 Soil Excavation and Management of Spoils

Soil Excavation

Contaminated soil would be excavated from the footprint of the proposed roadway or parking lot area, as depicted by Figure 1-7, using conventional excavation equipment, such as excavators and backhoes. Based on the roadway length of approximately 4,300 feet, an average excavation depth of six inches and a roadway width of 49 ft, the volume of excavated soil is estimated to be approximately 121,150 CF (approximately 4,500 cubic yards [CY], weighing an estimated 6,800 tons). The estimated volume includes a 15% correction factor to account for over-excavation and expansion of the excavated soil.

Soil Containment and Disposal

Soil that is excavated from within the Southeast AOC 1, but outside of SWMU 19A, would be placed within the proposed ROW and other designated portions of the Southeast AOC 1 (as necessary) and subsequently covered with a minimum of 1.5 feet of clean fill or an asphalt/concrete barrier system (Figure 1-8). Soil generated during future construction activities, completed within the Southeast AOC 1, will be managed in a manner similar to the management of soils in the City of Waterloo ROW corridor and covered by concrete, asphalt, and / or a minimum of 1.5 feet of clean fill.

Excavated soil, from within SWMU 19A, would be properly managed within said unit to the extent practicable. Some or all of this material may also be loaded directly onto dump trucks for transport to a licensed treatment and/or disposal facility. If necessary, a temporary storage area would be constructed at an appropriate location for waste characterization purposes. Based on an area of approximately 13,500 SF and an average excavation depth of 2 feet, the volume of soil to be transported off-site is estimated to be 1,000 cubic yards (CY) (approximately 1,500 tons). The estimated volume includes a factor of 15% to account for over-excavation and expansion of the excavated soil. Excavated soil would be transported in accordance with applicable and appropriate rules and regulations. It is estimated that approximately 77 truckloads (13 CY per truck) would be required to dispose approximately 1,000 CY of excavated spoils. The actual disposal volume is dependant upon final design criteria and may include excavated soil from outside of SWMU 19A.

Waste Characterization

Characterization sampling of excavated soil, generated from the Southeast AOC 1, would be required for off-site treatment and/or disposal at a licensed facility. The number of characterization samples, if required, will be determined based on the actual amount of soil to be disposed such that the sampling and analysis performed will provide analytical results that are adequately representative of the soil to be disposed. The management of all hazardous wastes and contaminated media shall comply with all federal, state, and local laws and regulations. At a minimum, characterization samples would be analyzed for flashpoint, pH, reactive cyanide, VOCs, semi-volatile organic compounds (SVOCs), PCBs/pesticides, herbicides, total RCRA metals and RCRA metals by toxicity characteristic leaching procedure (TCLP).

Controls and Worker Safety

Special controls would be implemented during excavation and backfilling activities to minimize environmental releases and to protect worker safety. Some of the controls would include the following:

- The evaluation of any proposed work involving excavation and soil handling/management will be reviewed by a certified industrial hygienist or equivalent in accordance with OSHA requirements. Consideration will be given to site-specific environmental sampling results to determine the practices needed for protecting workers and others from unacceptable exposure to site contaminants.
- Use of appropriate dust control measures;
- Use of OSHA-trained workers for handling hazardous materials;
- Use of appropriate health and safety precautions and plans;

- Appropriate use of equipment decontamination areas to prevent off-site migration of contaminants.

1.11 PROJECT MANAGEMENT

This section presents the overall project organization and key personnel for the CMI.

1.11.1 Project Organization

The proposed CMI project organization is shown in Figure 1-9. In general, the organization includes management personnel who will be responsible for communication with project and U.S. EPA personnel, technical direction of the project and preparation of deliverables; advisory personnel who will review project quality assurance and health and safety issues; a CMI team who will perform the design and implementation of corrective measures; and a public relations team who will keep members of the surrounding community informed about pending activities at the site and will assist Deere, CVDA, and U.S. EPA in anticipating and responding to community concerns.

Additional qualified personnel are available within WESTON in the fields of chemistry, risk assessment/toxicology, community relations, and civil, environmental, chemical, electrical, mechanical, geotechnical, and structural engineering, if needed, for special site conditions.

1.11.2 Project Management

1.11.2.1 Management Personnel

Deere Project Director—Mr. James Kalina. The Deere Project Director has overall responsibility for the success of this project in meeting Deere's corporate objective of full compliance with both the letter and spirit of corrective action requirements. The Deere Project Director ensures constructive two-way communication between project participants and agency personnel, as well as communication and coordination with Deere officers and ownership in approvals of scope, schedule, and budget for the project.

WESTON Program Director—Mr. Kevin M. Axe, P.G. The WESTON Program Director is responsible for ensuring all of the required resources are available to successfully complete the project. Mr. Axe is a Professional Geologist in the State of Illinois, with over 28 years of geological experience, primarily working at RCRA-regulated facilities throughout the United States. He has been working on RCRA-related activities at Waterloo Works for more than 16 years.

WESTON Project Manager—Mr. Brian A. Hahn, P.G. The WESTON Project Manager will be responsible for the day-to-day coordination of WESTON's activities. In this capacity, Mr. Hahn will be responsible for meeting deadlines and ensuring the project is executed on schedule and within the agreed-upon budget. Mr. Hahn is also responsible for preparing this Work Plan and all corresponding submittals to U.S. EPA. During active phases of work, he will maintain daily contact with project personnel to ensure technical quality and efficient use of WESTON's resources. Mr. Hahn is a registered Professional Geologist and certified Hydrogeologist in the State of Wisconsin. He has more than 17 years of experience as a geologic, water resource, and environmental consulting professional.

WESTON Quality Control Manager—Mr. Deepak Bhojwani. The WESTON Quality Control Manager will be responsible for providing technical and quality assurance/quality control (QA/QC) support during all phases of the project. Mr. Bhojwani has over 17 years of experience in the management and support of large scale civil and environmental engineering projects, including 16 years of experience in remedial action (RA) activities at hazardous, toxic, and radioactive waste (HTRW) sites. He has been working on RCRA-related activities at Waterloo Works for more than 15 years.

1.11.2.2 Advisory Personnel

WESTON Certifying Professional Engineer—Mr. William F. Karlovitz, P.E. Mr. Karlovitz will be the Certifying Professional Engineer and provide QA/QC for this project. He is a Registered Professional Engineer in the States Illinois, Iowa, and Wisconsin with over 23 years of experience in water and wastewater projects involving treatability studies, treatment analysis, engineering evaluations, design, and preparation of detailed plans and specifications.

1.11.2.3 CMI Team

Resident Project Engineer – The RPE reports to the PM and CPE on construction-related issues. The RPE will be responsible for overseeing all field activities, including coordination of all field staff, equipment, and materials. The RPE will work closely with the construction contractors, Design Team Manager and CPE to ensure the project is executed effectively and in compliance with the Project Plans, Standard Specifications, and Special Contract Provisions.

Field Safety Officer – To be determined at a later date The Field Safety Officer (FSO) will be responsible for the implementation and enforcement of a specified health and safety program. The FSO will ensure the health and safety of field personnel are not jeopardized during construction activities. Work will be conducted to meet the quality objectives; however, safety will not be compromised in any case. The FSO will work closely with management personnel, contractors, and any other field personnel involved with applicable construction activities. The FSO is authorized to stop work if unacceptable safety and health risks exist and take appropriate measures to reestablish and maintain safe working conditions.

1.11.2.4 Public Relations Team

Public Relations Coordinator—Ms. Deborah E. Volkmer. Ms. Volkmer will work in conjunction with the project team to implement the Public Involvement Plan, as required. Ms. Volkmer has more than 26 years of experience writing reports, newsletters, and press releases, and has participated in a variety of community relations activities at more than 75 removal and remedial sites.

1.11.2.5 Subcontractors

Subcontractors will be procured for implementing the Final CMI Work Plan, following U.S. EPA approval of the CMI Work Plan. The plans and specifications, included within the 100% Design Submittal, will be utilized during the subcontractor procurement process. The selected subcontractors (including construction, drilling and laboratory services) must provide, when applicable, personnel who are trained in handling hazardous wastes, experienced in environmental remediation, and properly trained/monitored for hazardous waste operations.

When the subcontractors are chosen, U.S. EPA will be notified and provided with their qualifications.

SECTION 4
DATA COLLECTION ASSURANCE

Waste characterization sampling would be required for excavated soil, prior to off-site treatment or disposal at a licensed facility. Typical environmental samples, collected to evaluate performance of the remedy, will not be required as part of the proposed CMI activities. Consequently, a Quality Assurance Project Plan (QAPP) and Field Sampling Plan (FSP) are not required for implementing the proposed remedy.

The number of characterization samples, if required, will be determined based on the actual amount of soil to be disposed such that the sampling and analysis performed will provide analytical results that are adequately representative of the soil to be disposed. The management of all hazardous wastes and contaminated media shall comply with all applicable federal, state, and local laws and regulations. At a minimum, characterization samples would be analyzed for flashpoint, pH, reactive cyanide, VOCs, SVOCs, PCBs/pesticides, herbicides, total RCRA metals and RCRA metals by TCLP.

CERTIFICATION

I certify under penalty of law that all revised sections for the document entitled "CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN (REVISION 1) – SWMU 19A AND SOUTHEAST AOC 1 – JOHN DEERE WATERLOO WORKS – WATERLOO, IOWA (WESTON: May 2007; Revised, 26 March 2008)" were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

James A. Kalina

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